Fixed points for the frozen velocity limit $\longleftrightarrow u_1^* = 0$

$$\beta_{g_1} = g_1(-y + 2\gamma_D - 2\gamma_v),$$

$$\beta_{g_2} = g_2(-\epsilon - \gamma_{g_2}),$$

$$\beta_{u_2} = -u_2\gamma_{u_2},$$

$$\beta_{u_1} = u_1(-\eta + \gamma_D),$$

$$\beta_a = -a\gamma_a,$$

anomalous dimensions

$$\begin{aligned}
\gamma_D &= \frac{g_1}{4(1+u_1)}\left[3 + \alpha\frac{u_1-1}{u_1+1} + \frac{4\alpha a(1-a)}{(1+u_1)^2}\right] + \frac{g_2}{8}, \\
\gamma_a &= (1-2a)\left[\frac{g_1\alpha(1-a)}{2(1+u_1)^3} + \frac{g_1 u_2}{4a(1+u_1)}\left(3 + \alpha - \frac{2\alpha}{1+u_1}\right) + \frac{g_2}{8a}\right], \\
\gamma_{u_2} &= \frac{g_1(1-2u_2)}{4(1+u_1)}\left[3 + \alpha\frac{u_1-1}{u_1+1} + \frac{2\alpha a(1-a)}{u_2(1+u_1)^2}\right] - \frac{g_2}{8}, \\
\gamma_{g_2} &= -\frac{3g_1}{2(1+u_1)} + \frac{g_1\alpha}{1+u_1}\left[\frac{(1-2a)^2}{2} + \frac{1-3a(1-a)}{1+u_1} + \frac{2a(1-a)u_1}{(1+u_1)^2}\right] - \frac{3g_2}{2}, \\
\gamma_v &= \frac{g_1\alpha}{4(1+u_1)^2}\left[\frac{4a(1-a)}{1+u_1} - 1\right] + \frac{g_1 u_2}{2(1+u_1)}\left[3 + \frac{\alpha u_1}{1+u_1}\right].
\end{aligned}$$

anomalous dimensions at fixed point $u_1^* = 0$

$$\begin{aligned}
\gamma_D^* &= \frac{g_1^*}{4}\left[3 - \alpha + 4\alpha a^*(1-a^*)\right] + \frac{g_2^*}{8}, \\
\gamma_a^* &= (1-2a^*)\left[\frac{g_1^*\alpha(1-a^*)}{2} + \frac{g_1^* u_2^*(3-\alpha)}{4a^*} + \frac{g_2^*}{8a^*}\right], \\
\gamma_{u_2^*} &= \frac{g_1^*(1-2u_2^*)}{4}\left[3 - \alpha + \frac{2\alpha a^*(1-a^*)}{u_2^*}\right] - \frac{g_2^*}{8}, \\
\gamma_{g_2^*} &= -\frac{3g_1^*}{2} + \frac{g_1^*\alpha}{2}\left[10(a^*)^2 - 10a^* + 3\right] - \frac{3g_2^*}{2}, \\
\gamma_v &= \frac{g_1^*\alpha}{4}\left[4a^*(1-a^*) - 1\right] + \frac{3g_1^* u_2^*}{2}.
\end{aligned}$$

Fixed points

- FP I

$${g_1}^* = 0, \quad g_2^* = 0, \quad u_1^* = 0, \quad a^* \text{ not fixed }, \quad u_2^* \text{ not fixed}$$

$$\Omega_1 = -\epsilon, \quad \Omega_2 = -\eta, \quad \Omega_3 = -y$$

- FP II

$$g_1{}^* = 0, \quad g_2^* = \frac{2\epsilon}{3}, \quad u_1^* = 0, \quad a^* = \frac{1}{2}, \quad u_2^* = 0$$

$$\Omega_1 = \frac{\epsilon}{12}, \quad \Omega_2 = \frac{\epsilon}{6}, \quad \Omega_3 = \epsilon, \quad \Omega_4 = \frac{\epsilon}{6} - y, \quad \Omega_5 = \frac{\epsilon}{12} - \eta$$

- FP III

$$g_1{}^* = \frac{2(3-\alpha)y}{9}, \quad g_2^* = 0, \quad u_1^* = 0, \quad a^* = \frac{1}{2}, \quad u_2^* = \frac{\alpha}{2(\alpha-3)}$$

$$\Omega_1 = \frac{\alpha-3}{6}y, \quad \Omega_2 = \frac{3-\alpha}{6}y - \eta, \quad \Omega_3 = y, \quad \Omega_4 = \frac{\alpha^2 - 9\alpha + 18}{18} - \epsilon$$

- FP IV

$$\begin{aligned} &u_1^* = 0, \quad g_2^* = 0, \\ &y = g_1^*\left(\frac{3}{2} - 3u_2^*\right), \quad 2a^*(1-a^*)\alpha + (3-\alpha)u_2^* = 0 \end{aligned}$$

- FP V

$$g_1{}^* \neq 0, \quad g_2^* \neq 0, \quad u_1^* = 0, \quad a^* = \frac{1}{2}, \quad u_2^* \neq 0$$

g_1^*, g_2^* and u_2^* are determined from equations (explicit results can be obtained with mathematica)

$$\begin{aligned} &\frac{3g_1^*}{2} - 3g_1^*u_2^* + \frac{g_2}{4} = y, \\ &\frac{g_1^*}{4}(6-\alpha) + \frac{3g_2^*}{2} = \epsilon \\ &\frac{g_1^*(u_2^*)^2}{2}(3-\alpha) + \frac{g_1^*u_2^*}{4}(2\alpha-3) - \frac{\alpha g_1^*}{8} + \frac{g_2^*u_2^*}{8} = 0 \end{aligned}$$

- FP VI

$$g_1{}^* = \frac{2(\epsilon-y)}{2\alpha-9}, \quad g_2^* = \frac{12\epsilon + 8y(\alpha-6)}{2\alpha-9}, \quad u_1^* = 0, \quad a^*(1-a^*) = \frac{\epsilon(\alpha-6)+3y(5-\alpha)}{2\alpha(\epsilon-y)}, \quad u_2^* = 1$$

$$\begin{aligned} &\Omega_1, \quad \Omega_2, \quad \Omega_3, \quad \Omega_4, \\ &\Omega_5 = \frac{(\alpha-6)\epsilon + 3(5-\alpha)y}{2(2\alpha-9)} - \eta \end{aligned}$$